DOCUMENT RESUME

ED 157 855 SO 011 099

AUTHOR Watts, Meredith W.
TITLE Physiological Studies of Violence-Related Attitudes.
PUB DATE 78
NOTE 40p.; Paper presented at Annual Meeting of the American Political Science Association (New York, New York, August 31-September 3, 1978)

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Aggression; Anti Social Behavior; Behavior; Cutaneous Sense; Heart Rate; Individual Differences; Personality; Physiology; Psychophysiology; *Reactive Behavior; *Relationship; Research Methodology; Sex Differences; *Social Attitudes; *Social Science Research; *Stimulus Behavior; Stress Variables; Television Viewing; *Violence

ABSTRACT

This paper reviews previous research and describes a study about the use of psychophysiological indicators (skin conductance response--SCR and heart rate--HR) to measure people's reactions to violence. The review of research describes attempts to gauge the association between people's attitudes, personality, and physiological responses when they viewed violent situations on videotape. These studies generally confirmed a relationship between a person's lack of empathy toward others and low arousal when viewing stimuli. In the author's study, she continued to analyze the relationship of people's individual personality differences, attitudes, and gender to their physiological responses when viewing television and movies with varying degrees of violence. Before viewing the films, subjects' attitudes were measured toward weapon-oriented violence, empathy, and aggressive behavior in the milieu of children. Results of film viewing showed that males with high ego strength had increased SCR and HR responses when negative social behavior was modeled. High acceptance of aggressive social behavior and use of weapons seemed to be associated with lower SCR response and with HR deceleration for males, especially when very violent stimuli were given. For females the pattern was mixed and unreliable. Although additional research is needed, the author believes that people's different personalities and attitudes make them respond in different ways to social behavior and communications. (Author/AV)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED157855

AUG 28 1978

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Physiological Studies of Violence-Related Attitudes

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Meredith W. Watts

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

Meredith W. Watts

University of Wisconsin-Milwaukee

SP011 097

Prepared for delivery at the 1978 Annual Meeting of the American Political Science Association, The New York Hilton Hotel, New York, New York, August 31-September 3, 1978.
Copyright by the American Political Science Association, 1978.

The studies described here stem from a belief that evidence of the affective component of social attitudes can be at least partially indicated by psychophysiological indicators (e.g., skin conductance response, heart rate) and that the verification of such a connection can be useful for the validation of attitude scales. In a more specific substantive sense, we want to suggest that such measures can be used to indicate how people react emotionally to social stimuli. To the extent that such connections can be established, we can have increased confidence in the validity of "attitude" and "personality" scales such as those currently used so extensively in social research. Obversely, evidence concerning the usefulness of psychophysiological procedures in measuring the impact of social communication such as television and other modeled behavior might help provide refinements in the study of sociopolitical attitudes and their physiological substrates.

Whether or not we feel comfortable with the term "attitude," it is reasonable to assume that individual humans display measurable consistencies of response to various stimuli. The important matter is to assess the amount of consistency articulated among the various response modes, whether verbal, physiological or behavioral. Once the amount of consistency is roughly known, the most appropriate response measure may be employed

in a given research situation. For example, the verbal response mode is the staple of survey research, but, in other situations, physical behavior or even physiological reactivity may be the more important variables to measure.

The research reported here has attempted to gauge the association between "attitudes" and "personality" as measured by psychometric scales and physiological responsitivity when relevant stimulus situations are presented on videotape. If there is a predictable pattern of response, we can assume some degree of construct validity (Crombach & Meehl, 1955) in the measures; we can thereafter have more faith in them and better knowledge of what they measure. If there is no predictable pattern of response, then we should reconsider our use of such measures.

We will briefly review previous research on the physiological substrate of "attitude" with particular emphasis on predispositions toward certain types of orientations toward others (e.g., aggressiveness, empathy) in which children (ages 11-14) and young adults served as subjects. They will be reported only synoptically since they have been presented elsewhere (Watts, 1976; Watts & Sumi, 1975; 1976a; 1976b). The last portion of the paper reports an attempt to take into account more aspects of "personality" as well as "attitude."

Previous Research

Cline, Croft & Courrier have provided data suggesting that there is a link between the amount of television young people have watched and their physiological response to televised aggression. Specifically, they concluded that

"high television exposure boys [aged 5-12]... showed significantly less arousal autonomically, which might be interpreted as some degree of desensitization to the filmed violence (1974: 264)."

This study, though motivated by much the same concern as that by Cline and his associates, was designed to test explicitly whether the predispositions of the viewer were more closely associated with autonomic arousal than a gross measure of television exposure to violent programs. It seemed important to give theoretical priority to the attitudinal variable in order to keep at the forefront our concern for the individual's capacity for mediating, filtering, and giving meaning to external stimuli. Therefore, our conceptualization posits that attitude (or response disposition) represents a "mental set" that mediates incoming stimuli and gives them meaning to the individual. Rather than the direct link between exposure and "desensitization" implied by the Cline formulation, it seemed preferable therefore to argue that (1) television can provide models of violent behavior, but that (2) the effects of viewing are mediated by the viewer's attitudes toward violence.

The attitude scale adapted especially for the study was a modification of Lovibond's CF ("Children's F") scale (Lovibond, 1967), designed to be a general measure of violence-acceptance and lack of empathy with others. The scale has an explicit kinship with the F-scale developed by Adorno and his associates (Adorno, Frenkel-Brunswik, Levinson & Sanford, 1950), and was originally designed for use with Australian youths.

Lovibond's previous work on children's media exposure found the CF scale to have positive tetrachoric correlations of .40 for comic books, .40 for films, and .10 for radio. There was also a significant association with the number of hours of television watched as well as with a preference for crime and violence programs. Lovibond concluded that

> ...there is a relationship between exposure to crime and violence media and endorsement of an ideology which makes the use of force in the interests of egocentric needs the essential content of human relationships. (1967, p. 97)

A revised version of this scale was analyzed previously by the authors (Watts & Sumi, 1975) and found to have sufficient validity and reliability for tentative use as a measure of violence acceptance. It was expected that children scoring on the CF scale (high violence-acceptance) would show HR deceleration during exposure to television violence; acceleration was expected for subjects scoring low on the scale. (Lacey, 1967; Lacey, Kagan, Lacey & Moss, 1963; Lacey & Lacey, 1970; 1974)

An index of overall violence viewing (OVV) was adapted from McLeod, Atkin and Chaffee (1972) to measure exposure of children to television violence. The index was a multiplicative index of (1) each child's estimate of viewing frequency for each program and a violence rating for each program obtained from a panel of 230 undergraduate college students.

Repeated measures analysis of variance indicated no significant effects for gender of child or for the overall violence viewing index (OVV) with skin

conductance response (SCR) as the dependent variable, although there were, not surprisingly, differences in arousal value of the various stimulus segments presented. In addition, there was no significant effect for gender or OVV using beat-to-beat heart rate response (HRR) as the dependent variable. These findings were contrary to Cline and his associates.

However, since theoretical priority was given to the "attitudinal" variable, the more crucial test was whether the CF scale showed a main effect. There was a significant effect (at the .05) level for CF but not for gender of child. Given the small sample size (10 males and 10 females), the finding should not be over-interpreted, but it was taken as preliminary evidence in favor of the Lacey hypothesis concerning the effects of "attitude." That is, children with a high CF score (more violence-accepting) were more likely to display HR deceleration while children with a low CF score (more violence-rejecting) were more likely to show HR acceleration. Further, the findings could indicate that it is not the amount of exposure to modeled violence per se that produces "desensitization"; rather, the attitudinal changes associated with viewing seem likely to be the more proximal and influential variable. From this, we would emphasize attitudinal or cognitive mediation of stimulus inputs. It seemed reasonable therefore to give theoretical emphasis to the interaction between between the response dispositions of the individual during interaction with the stimulus presentation (e.g., television viewing) and to propose that the effect of the modeled behavior depends, in large part, on the "meaning" of the behavior for the individual. Stated another way: the attitude toward aggression seems significantly

related to the type of emotional reaction experienced while viewing videotaped models of hostile social behavior. This is consistent with Lacey's proposed continuum of stimulus intake versus stimulus rejection.

Subsequent research (Watts & Sumi, 1976a) was undertaken using the same stimulus material with a somewhat larger sample of young adults (23 males, 20 females). Although the CF scale was obviously not relevant, other scales were employed to measure the individual's orientation toward others--hypothesizing once more that high violence acceptance and low empathy would be related to HR deceleration (Lacey's stimulus intake) while opposite scores on relevant scales would be related to HR acceleration (stimulus rejection). The object was to determine whether several "personality" and "attitude" measures were associated with physiological response.

One instrument employed was the Christie and Geis (1970) Machiavellianism scale which measures views on human nature, interpersonal tactics, and general moral principles. The authors have claimed that the three components taken together constituted an aloof and manipulative orientation toward other individuals.

The Mach IV version of the scale purports to measure a personal pattern that includes a relative lack of affect in interpersonal relationships, cool detachment, interpersonal manipulativeness, cynicism about human nature and, to some extent, lack of empathy (Christie & Geis, 1970; Elms, 1976; Stone, 1974). Experimental studies have found high Machs to differ from low Machs in their greater use of deceptiveness and manipulation, greater improvisation of deceptions, and a greater tendency to enjoy such tactics.

This scale was included because the dimensions of detachment, manipulativeness, and "amorality" implied in the Mach IV scale should be negatively associated with arousal while viewing televised models of aggressive social behavior. Moreover, Wrightsman & Cook (1965) found Machiavellianism to be correlated with manifest hostility at .60 and with "favorableness toward human nature" at -.68 (Wrightsman, 1968) so it seemed reasonable to hypothesize that high Machs would tend toward lower autonomic arousal and toward stimulus intake rather than stimulus rejection.

Since, however, aggressiveness is not a necessary component of "Machiavellianism," a more direct measure of attitudes toward aggressive social behavior was developed. A "Violence Ideology" (VI) scale was constructed, based on the technique of Wilson and Patterson (Wilson, 1973; Wilson & Patterson, 1968). This scale was comprised of 10 concepts to which the respondent was to register "belief in" or "approval of"--such items as death penalty, gun control, and physical punishment of children. A parallel scale, Traditionalism (Tr) was developed to measure the level of conventional traditionalism. This construct, often referred to as "anti-heterodoxy," has been found to be associated with preference for punitive treatment of "deviants" as opposed to the more libertarian concept of "due process (see Watts, 1977; 1978). (More detailed analysis of the scales and their interrelations can be found elsewhere [Watts & Sumi, 1976a].)

It was hypothesized that both the VI and Tr scales would show a negative association with SCR arousal and that high scorers (high violence-acceptance, high traditionalism) would tend toward stimulus intake (decreased HR)

rather than rejection when shown audiovisual models of aggressive or violent behavior. The same directionality was hypothesized for Machiavellianism.

Composite arousal scores were constructed for SCR and HRR to allow for the use of simple and multiple regression to test for the hypothesized negative associations with both physiological parameters.

The relevant coefficients in Table 1 present the findings for skin

---

Table 1 about here

---

conductance response by gender. For males, all coefficients are in keeping with the hypothesis but a possible gender difference appears for the females. For them, the Machiavellianism scale had the opposite relationship and the VI scale was correlated at virtually zero. This represents, or at least points to, a significant problem in the use of the Mach scale for comparisons of males and females--for whatever reason, the Mach scale has opposite associations with physiological arousal. The other correlations for females are low also accentuating the gender difference, but they are at least not in the contrary direction.

Because of the counter-hypothetical behavior of the Mach scale, it was deleted from the multiple correlation coefficients calculated in the last column. Those coefficients are based on the regression of VI and Trad on the composite SCR measure. As would be expected from the zero-order coefficients, the verbal self-report measures predict arousal for males far better than for females.

The hypothesis concerning "directional fractionation" of response is tested in the last half of Table 1. As predicted, HRR is negatively correlated with all attitude scales, indicating that aversion to violence, aggression and manipulativeness are associated with stimulus rejection. As with SCR, the HRR coefficients are greater for males than for females; the corresponding multiple correlation coefficients reflect this phenomenon as well. Though the coefficients are in the direction hypothesized, their predictive value is more substantial for males. These findings alone should alert us to gender differences in the "meaning" of attitude and personality scales, and alert us to the possibility of gender biases in the development of such self-report scales.

On the whole, though, the confirmation of the general hypotheses indicates an association between lack of empathy and low arousal. This, in turn, indicates that the scales are, in some fashion, measuring phenomena of social importance. This is reason enough to propose that physiological measures can be used to validate and refine verbal self-report instruments, particularly when such scales are to be used on large survey samples. Better understanding of the physiological substrate associated with the various instruments could only strengthen inference from those scales.

Further Investigations With Ego Strength (Es) and Additional Attitudinal Measures

Ego Strength (Es)

Though the evidence seems ample that cognitive and affective characteristics of the observer (e.g., "attitude," "mental set") influence

physiological reactivity, there may also be deeper personological characteristics related to physiological response. Hans Eysenck expresses such individual differences in the formula: Stress = k x Strain, in which the amount of stress experienced is a function of the strain imposed by the environment and k, the individual's characteristics relevant to coping with environmental stress. * Eysenck prefers to measure the k factor with his own questionnaire instruments representing the constructs of E (Extroversion vs. Introversion) and N (Neuroticism); but the related construct of Ego Strength (Es) has also been studied widely. **

The primary impetus for including that measure here comes from the investigations of R. Roessler and his associates who have systematically tried to relate Es to emotional reactance. Their research seems consistent with Eysenck's belief that "the whole experimental endeavor only makes sense in terms of the interaction between personality and experimental conditions," and that "no model can possibly be adequate if it neglects the task for incorporating individual differences." (Eysenck, p. 444). A brief review of Roessler's research will place in perspective that author's use of Es.

---

*This is our simplified and adapted to the language of the current study. For Eysenck's more thorough explication, see "The Measurement of Emotion" (1977).

**Es seems to have received more attention in American studies than the Eysenck personality inventory items and were therefore chosen for this analysis. Eysenck's E and N scales will be included in a future study. I would like to thank David Gow for pointing out the relevance of Eysenck's work.

In one experiment Roessler & Collins (1970) divided 20 male subjects into high and low Es groupings and subjected them to three conditions--rest, a bland film, and a stressor film (depicting industrial accidents). The basal SC of the low Es group was found to be lower than that of the high Es group during the stressor film; that is, individuals with low ego strength showed less reactivity. Heart rate (HR) appeared to be higher by a small, but insignificant, margin among the high Es group also. The overall conclusion was that

> ...high Es persons are more responsive in SC to complex stimuli of high symbolic value as well as to simple ones. In addition, high Es persons have been shown to be more responsive to stimuli whose effect is to lower levels of physiological activation; i.e., their range of activation is greater, varying with the nature of the stimulus configuration. High Es Ss appear to be persons who are pervasively more responsive to their environment and to change in it. Low Es persons, on the other hand, appear to be characterized by relatively less physiological responsivity to environmental change. They may be employing perceptual defense more pervasively and indiscriminately. (Roessler & Collins, 1970, p. 738)

Other research by Roessler (1973) found similar activation differential for finger blood volume and muscle potential (measured via electromyogram), where the higher the Es, the greater the individual's response variability, (p. 317).

By way of summary, Roessler concluded that

> ...if a strong ego is one characterized by little or no perceptual defense all stimuli would be perceived fully, but less threatening ones less intensely than more threatening ones. We would therefore expect such a person to respond more to threatening stimuli and less to nonthreatening ones. This latter prediction is consonant with the experimental results...(p. 325)

If such personality characteristics do in fact have an association with physiological responsiveness, this "k" factor should be incorporated in psychophysiological research. Otherwise, it would act to confound experimental treatment effects and contribute to error variance. Following Roessler, we hypothesized that Es would correlate positively with electrodermal change. We expected the effect to be the greatest in the more stressful stimulus condition--the film depicting violent behavior in graphic detail. No specific prediction was made for HR response, though more variability might be expected in this parameter also. Roessler scarcely comments on possible gender differences and no predictions were made; however, correlations were computed separately by treatment and by gender.

Attitudes (Predisposition) and Arousal

Two measures of social attitudes were chosen to emphasize the salient aspects of the alternative treatment conditions. The first scale, called "WEAPONS," (Appendix A) was adapted from items developed mainly by Brady and Rappoport (1973). The title is only partially accurate in that, of the five items, three deal with weapons and the remaining two relate to

"masculine sports" and "survival of the fittest." This scale was designed to measure certain attitudes relevant to the stimulus material in the violent condition which contained explicit scenes of weapon-oriented violence.

The second scale is termed simply "VALUES" and is a modified version of the social welfare dimension of Perloe's Personal Values Questionnaire (Robinson & Shaver, 1973, pp. 565-585). Items concerning empathy and responsibility for others' welfare were selected from the PVQ and submitted to factor and item analysis. The resulting scale (Appendix A) was believed to relate closely to values portrayed in the nonviolent treatment and was expected to show lower associations with arousal in the violent treatment condition because of its lesser criterial relevance than WEAPONS.

The third attitude scale concentrates on violence and aggressive behavior in the milieu of children. The TVKIDS scale is frankly a mixture of belief and affective items which have, as a common focus, the accessibility of violent and aggressive behavior models to children. Of moderate to good reliability (Cronbach's alpha = .68), the scale was adapted from items employed by Brady and Rappoport (1973) and by Watts and Sumi (1975). It is intended entirely as an ad hoc scale for this analysis. It is hypothesized that individuals scoring high on this scale--those who reject violence in the presence of children--will tend to show stimulus rejection (HR acceleration) and greater autonomic arousal (SCR). Following this same logic, it would also be hypothesized that a high score of WEAPONS (high acceptance of aggressive sports and weapons) and a high score on VALUES (low empathy) would also be associated with HR deceleration and increased SCR.

Design

The experiment itself was conducted in a manner identical to those described above except that the stimulus material was altered, two treatment conditions were employed, a larger sample size was obtained, and more extensive besting was used.

A pretest questionnaire containing Ego Strength (Es) and various attitude measures was administered to a class of approximately 250 introductory Political Science students. Later in the course, volunteers were solicited from the same class and offered extra course credit for participating in the experiment. Approximately 100 students volunteered and were randomly assigned by gender to two treatment conditions. The violent treatment groups (Female/Violent--FV; and Male/Violent--MV) were shown a 25 minute film that included segments from several motion pictures featuring explicit violence and bloodshed. Scenes were excerpts from "The Godfather," "Bonnie and Clyde," "The New Centurions," and "In Cold Blood." The bland condition (FNV and MNV) featured excerpts from an NBC special on the Tasaday, a stone-age cave people discovered in the mid-1960's. The tribe was completely nonviolent and appeared to be bound together by intense empathetic understanding. They possessed no identifiable authority structure, jointly shared responsibility for all the tribe's children, and had no words in their vocabulary for violent or aggressive acts.

On entering the experimental room, participants were told that the experiment was to investigate people's reactions to television and movies.

Thereafter, they were attached to a polygraph* that monitored skin conductance (SC) and beat-to-beat heart rate (HR). The lights in the room were dimmed to reduce non-stimulus distractions, and approximately 10 minutes were allowed for the participant's heart rate and skin response to achieve a stable rate. The appropriate videotape was then presented.

RESULTS

Effects of Sex and Treatment

Previous studies (Hare, et al., 1971) and work by the current authors (Watts, 1976) indicates the likelihood of sex differences either in the scales, their interrelationships, or the psychological dimensions of the stimuli used in experimentation. This would be particularly true where stimuli are complex configurations of social phenomena and where the criterial referents of the psychometric instruments are not sufficiently specific (Kerlinger, 1967; Crespi, 1971; Watts, 1976). Therefore, we shall test throughout to see if there are manifest gender differences in findings. More importantly, we wish to see whether the stimuli chosen for alternate treatments indeed have different effects on arousal. This is tantamount to asking the commonsense question: Does the nature of the video programming have any impact on emotion or physiological reactivity? In this section we test for gender as well as treatment effects. Tables 2 and 3 contain relevant findings for SC and HR measures.

---

*SCR was taken using finger-cup electrodes developed by Gilson Medical Electronics. A finger-tip photoplethymograph coupled to a cardiotachometer measured HRR. All records were produced on a Gilson Model ICT-5H polygraph.

The particular skin conductance measure employed in Table 2 is the total number of SCR deflections in excess of .50 of the individual's

Table 2 about here

maximum during the experimental period (NGSRD). Though only a rough estimate, it does allow comparison of the two quite different stimulus conditions. As Table 2 indicates, treatment condition was significantly related to the amount of SCR activity emitted by the individual during the session. Gender, however, was not. An inspection of the multiple classification analysis (see Nie, et al., 1975) shows an adjusted beta of .38 for treatment and a much lower beta of .14 for gender. Females did apparently show some tendency toward greater reactivity, but the difference was not significant.

Table 3 examines heart rate response. The particular measure, HRSA, represents the difference between the 10 highest and 10 lowest heart rate responses recorded during the experiment and is adapted from the technique of Carruthers and Taggart (1973). Again, there are significant treatment differences; those in the violent treatment showed the greatest

Table 3 about here

amount of heart rate variability. The beta of .35 indicates the strength of the relationship. The F-ratio and associated beta statistic indicate no association between gender and heart rate response.

These tests indicate that there were meaningful and statistically significant differences in the arousal potential of the Violent and Nonviolent treatment conditions. The next step is to examine gender and treatment differences with respect to individual differences among the participants as measured by Ego Strength (Es) and the three attitude scales (WEAPONS, VALUES, and TVKIDS).

Individual Differences by Personality and Attitude Measures

For this portion of the analysis, subjects were divided by treatment and gender so that correlations could be conducted within each of the four treatment/gender combinations. The coefficients are presented in Tables 4 and 5. Table 4 presents the coefficients for males.

Table 4 about here

It was hypothesized, following Roessler, that Es would be associated with overall arousal. It seems reasonable also that since the overall amount of arousal would be less for the NV treatment group the coefficients might also be lower. That was, in fact, the case. Only the SCR measure of overall arousal was significant for the NV group while all measures showed significant correlations for the V group. The two HR measures operationally measure the maximum and minimum mean heart rates indicated by the subjects while viewing. The coefficients indicate that the acceleration and deceleration, and therefore the overall variability, of HRR is associated with Ego Strength.

The data for the remaining three attitude measures are mixed. The TVKIDS and WEAPONS scales were designed to approximate the criterial referents modeled on the violent videotape. As such, they would be expected to show closer relationships to SCR and HRR in the V treatment if Kerlinger's (1967) case for criterial referents and Cronbach and Meehl's for construct validity (1955) hold for these scales. As the correlations indicate, the coefficients were generally higher in the V treatment, and that condition produces the only significant coefficients for these two scales. The relationship with SCR arousal is particularly marked: The greater the tolerance for violence in the milieu of children, and the greater the interest in weapons and aggressive sports, the less the arousal while viewing videotaped models of interpersonal violence. Interestingly, though the coefficients never reach significance, the subjects in the NV treatment with those characteristics were also less responsive to presentations of positive, empathetic social models. It may be the case that those who score on the empathetic end of the continuum are more responsive to <u>both</u> positive and negative social stimuli.

The VALUES scale was selected for its approximation to the positive social values modeled in the NV treatment. No coefficients reach significance and the pattern is sufficiently mixed that little can be inferred. It may be that the criterial referents were too diffuse or that the VALUES did not validly measure anything of consequence to the stimulus material or the subjects (even though it was statistically "reliable"). At any rate, the data in Table 4 generally indicate analytic utility for the ES, TVKIDS and WEAPONS scales, but do not for VALUES. There is little encouragement here for subsequent use of the scale.

Table 5 presents the same coefficients for females. The sample size

---

Table 5 about here

---

was smaller in each of the treatments because of a combination of implementation difficulties and the availability of fewer female volunteers. Even so, several of the correlations reach statistical significance. There are, however, several differences from the pattern of responses for males.

In the V treatment, Es was associated with greater SCR arousal, but the HR deceleration variable was in the reverse direction. For the TVKIDS scale, high acceptance of violent stimuli in the milieu of children was associated with greater acceleration and greater SCR arousal. The relevant coefficients are the opposite of those hypothesized, and the opposite of those found for the males. For WEAPONS, however, the strongest relationship is in the hypothesized direction--the greater the acceptance of weapons, the less the SCR response. For VALUES, the largest coefficient is in the hypothesized direction (the less empathetic, the less the HR acceleration); but the overall pattern is mixed.

For the V treatment, the only significant correlation (.42) is between Es and increased SCR activity as hypothesized. The rest of the pattern is mixed: the association between TVKIDS and HR deceleration is similar to that found for males (and as hypothesized), but the next highest correlation in the table--between WEAPONS AND HR acceleration--is the reverse. The VALUES scale for the V treatment was absolutely unproductive, reinforcing

the earlier indication that it may not measure anything of relevance to either the positive or negative social stimuli presented. In addition, certain general observations can be made concerning the relationship between personality/attitude measures and physiological response:

1. Roessler's hypothesis that high Ego Strength is associated with increased psychophysiological reactance was confirmed for males using both HR and SCR measures; for females, the hypothesis held generally but at a lower level and with a major anomaly for HR deceleration. The associations also seemed stronger for the V treatment where negative social behavior was modeled.

2. High acceptance of aggressive social behavior and use of weapons (high WEAPONS, high TVKIDS) seem generally to be associated with lower SCR response and with HR decleration for males with the relationship being stronger in the V treatment. For females the pattern was mixed and unreliable.

3. The VALUES scale was mixed and unproductive across gender and treatment and does not seem relevant to the criterial referents modeled in the experiment.

4. The persistent, but unclear, pattern of gender differences uncovered in the earlier experiment with young adults persists in these data. To be sure, the sample sizes are small and less reliable for females than males in those experiments, but both have indicated a pattern of lesser relationships or even opposite coefficients. This is particularly clear with respect to the Machiavellianism scale and the WEAPONS scale. In the former case, aloofness and manipulativeness may simply mean something different

to females than to males (a plausible surmise)--in which case the relationship to physiological reactivity would be expected to differ. In the case of WEAPONS, the items are generally of a masculine-oriented character and would likewise be expected to have different subjective meaning to females than to males. In either case, this should serve as a caution to survey users of such scales.

The fundamental problem is not one of reliability, however. The scales used here were reliable by convenional criteria of item analysis and scale construction. The problem is one of validity--if the scales have different subjective meanings and, perhaps, different criterial referents for males and females, extensive use of such measures in questionnaires and interview protocols may produce confounded results when making gender comparisons. Thus, while we have provided only indications of invalidity, and with only a limited set of variables, the general caveat may hold for other (perhaps many, or even most!) attitude scales in common use. In other words, we should consider the possibility that the more productive attitude/personality measures are in psychophysiological research, the more likely they are to be valid and productive in non-psychophysiological research, particularly in survey and other questionnaire-based investigations.

Conclusion

Although there has emerged no generally-accepted theory linking psychological processes, psychometric or attitudinal measurement, and physiological arousal in the presence of relevant attitude objects; such writers as Arnold (1970) and Lazarus (1966; 1967; Lazarus, et al., 1963) have argued that it should be phenomenological; i.e., that it should in some fashion take into

account the subjective meaning states of the individual. Commitment to a phenomenological and cognitive perspective contains at its core an interest in personality and attitudinal difference among individuals.

Within such a perspective it should be possible to study both general social-political attitudes that predispose individuals to certain responses, and individual differences in those responses. This would be in keeping with Arnold's emphasis on a phenomenological analysis of emotion and response (1970) and Lazarus' concept of "cognitive appraisal" in emotion and coping response. The focus is on the meaning structure of the individual and on intersubjectively shared meaning structures (what Alfred Schutz termed "typifications"), based on the premise that "until we can determine the meanings of particular social stimuli to the individual, we cannot know what the individual is responding to." (Tursky et al., 1976, p. 865). The research reported here indicates that individual differences, particularly in personality and attitude characteristics, should be taken into account when studying media and the effects of social communications and social behavior.

References

Adorno, T. W., E. Frenkel-Brunswik, D. J. Levinson, and R. N. Sanford, The Authoritarian Personality. New York: Harper, 1950.

Arnold, M. Brain function in emotion: A phenomonological analysis, In P. Black (Ed.), Physiological Correlates Of Emotion. New York: Academic Press, 1970, pp. 261-285.

Bandura, Albert. Aggression: A Social Learning Analysis. Englewood Cliffs, N. J.: Prentice-Hall, 1973.

Brady, D., & Rappoport, L. Violence and Vietnam: A comparison between attitudes of civilians and veterans. Human Relations, 1973, 26, 735-752.

Carruthers, M., & Taggart, P. Vagotonicity of violence: Biochemical and cardiac responses to violent films and television programmes. British Medical Journal, 1973, 3, 384-389.

Cline, V., R. Croft and S. Courrier. Desensitization of Children to Television Violence, Journal of Personality and Social Psychology, 1974, 27, 360-365.

Crespi, I. What kinds of attitude measures are predictive of behavior? Public Opinion Quarterly, 1971, 35, 327-335.

Cronbach, L. J., and P. E. Meehl. Construct validity and in psychological tests. Psychological Bulletin, 1955, 52, 281-302.

Christie, R. and F. L. Geis. Studies in Machiavellianism. New York: Academic Press, 1970.

Elms, A. C. Personality in Politics. New York: Harcourt Brace Jovanovich, 1976.

Eysenck, H. J. The measurement of emotion. In Levi, 1974.

Hare, R. D., K. Wood, S. Britain, and J. Frazelle. Autonomic responses to affective visual stimulation: sex differences. Journal of Experimental Research in Personality, 1971, 5, 14-22.

Harvey, O. J. Cognitive aspects of affective arousal. In S. S. Tomkins and C. E. Izard (Eds.), Affect, Cognition and Personality. New York: Springer, 1965, pp. 242-262.

Kerlinger, F., Social attitudes and their criterial referents: a structural theory. Psychological Review, 1967, 74, 110-122.

Lacey, J. I. Somatic response patterning and stress: some revisions of activation theory. In M. H. Appley and R. Trumbull, eds., Psychological Stress. New York: Appleton-Century-Crofts, 1967, pp. 14-42.

Lacey, J. I. and B. C. Lacey. On heart rate responses and behavior; a reply to Elliott. Journal of Personality and Social Psychology, 1974, 30, 1-18.

Lacey, J. I. and B. C. Lacey. Some autonomic central nervous system interrelationships. In P. Black, ed., Physiological Correlates of of Emotion. New York: Academic Press, 1970, pp. 205-227.

Lacey, J., J. Kagan, B. Lacey and H. Moss. The visceral level: Situational determinants and behavioral correlates of autonomic response patterns, in P. Knapp, ed., Expression of the Emotions in Man. New York: International Universities Press, 1963.

Lazarus, R. S., Cognitive and personality factors underlying threat and coping. In M. H. Appley and R. Trumbull, eds., Psychological Stress. New York: Appleton-Century-Crofts; 1967, pp. 151-168.

Lazarus, R. S. Psychological Stress and the Coping Process. New York: McGraw-Hill, 1966.

Lazarus, R. S., Speisman, J. C., & Mordkoff, A. M. The relationship between autonomic indicators of psychological stress: Heart rate and skin conductance. Psychosomatic Medicine, 1963, 25, 19-30.

Lorenz, K., Innate bases of learning, In K. Pribram, ed., On the Biology of Learning. New York: Harcourt, 1969, pp. 13-93.

Lovibond, S. H. The effects of media stressing crime and violence upon children's attitudes. Social Problems, 1967, 66: 91-100.

Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, & Bent, D. H. SPSS: Statistical Package for the Social Sciences. 2nd ed.; New York: McGraw-Hill, 1975.

McLeod, J. M., C. K. Atkin and S. H. Chaffee. Adolescents, parents and television use: Adolescent self-report measures from Maryland and Wisconsin samples. In G. A. Comstock and E. A. Rubinstein, eds., Television and Social Behavior: Television and Adolescent Agressiveness. Washington, D. C.: Government Printing Office, 1972, 173-238.

Robinson, J. P., and P. R. Shaver. Measures of Social Psychological Attitudes. Rev. ed. 1973, Ann Arbor: Institutue ofr Social Research.

Roessler, R. Personality, psychophysiology, and performance. Psychophysiology, 1973, 10, 315-327.

Roessler, R., & Collins, F. Personality correlates of physiological responses to motion pictures, Psychophysiology, 1970, 6, 732-739.

Somit, A., Peterson, S. A., & Richardson, W. D. The Literature of Biopolitics. Northern Illinois University, DeKalb, Illinois: Center for Biopolitical Research, 1978.

Stone, W. F. The Psychology of Politics. New York: Free Press, 1974.

Tursky, B., M. Lodge, and D. Cross, 1976. A biobehavioral framework for the analysis of political behavior. In A. Somit, ed., Biology and Politics. The Hague: Mouton: 59-96.

Watts, M. W. Anti-heterodoxy and the punishment of deviance: A cognitive approach to law and order attitudes. Western Political Quarterly, 1977, 30, 93-103.

Watts, M. W. Stress and physiological aspects of political behavior: The psychophysiological component of aggressive attitudes. Prepared for presentation at the 10th World Congress of the International Political Science Association, Edinburgh, Scotland, August, 1976.

Watts, M. W. Crime control versus due process: Their place in an anti-heterodox world-view. Prepared for presentation at the First Annual Scientific Meeting of the International Society of Political Psychology, New York, September, 1978.

Watts, M. W., & Sumi, D. 1976_a. Attitudes and Physiological Response to Audiovisual Display of Aggressive Behavior, prepared for presentation at the Annual Meeting of the Midwest Political Science Association, 1976.

Watts, M. W., & Sumi, D. 1976$_b$. Desensitization of Children to Violence? Another Look at Television's Effects, Experimental Study of Politics, 1976, 5, 1-24.

Watts, M. W., & Sumi, D. 1977. Social empathy: Influences of prior disposition, sex, and arousal during exposure to alternative behavior models: Prepared for presentation at the William Munro Seminar, Stanford University, Palo Alto, California, April 1977.

Watts, M. W., & Sumi, D. Television and the Socialization of Children to Violence: Some emotional and physiological effects of viewing. Prepared for presentation at the Annual Convention of the Southern Political Science Association, Nashville, 1975.

Wilson, G. D., ed., The Psychology of Conservatism. New York: Academic Press, 1973.

Wilson, G. D., and J. R. Patterson. A new measure of conservatism. British Journal of Social and Clinical Psychology, 1968, 7, 264-269.

Wrightsman, L., and S. Cook. Factor analysis and attitude change. Peabody Papers in Human Development. Vol. 3, No. 2. Nashville: George Peabody College for Teachers, 1965.

Wrightsman, L. Measurement of Philosophies of human nature. Psychological Reports, 1964, 14, 743-751.

Table 1

Regression of Personality/Attitude Measures on Composite SCR and HRR Scores

Sex	Scale	Simple r	Multiple R*
SCR			
Males			
	Violence Ideology	-.49	
	Trad	-.47	.52
	[Mach	-.20]	
Females			
	VI	-.09	
	Trad	-.29	.30
	[Mach	.18]	
HRR			
Males			
	VI	-.41	
	Trad	-.42	.45
	[Mach	-.35]	
Females			
	VI	-.25	
	Trad	-.06	.26
	[Mach	-.17]	

*Multiple correlation coefficient for VI and Trad (excluding Mach, see text)

Table 2

Two-Way Analysis of Variance* on Physiological Arousal, By Gender and Treatment

ANALYSIS OF VARIANCE

NGSRD (Number of SC deflections in excess of .50 of maximum emitted during experiment)

By Gender and Treatment

Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Main Effects	798.428	2	399.214	4.381	.019
Gender	81.418	1	81.418	.894	.999
Treatment	596.508	1	596.508	6.547	.014
2-Way Interactions	44.419	1	44.419	.488	.999
Gender Treatment	44.419	1	44.419	.488	.999
Explained	842.847	3	280.949	3.083	.039
Residual	3371.250	37	91.115		
Total	4214.097	40	105.352		

MULTIPLE CLASSIFICATION ANALYSIS

NGSRD By Gender and Treatment

Grand Mean = 12.56

Variable + Category	N	Unadjusted Dev'n	Eta	Adjusted for Independents Dev'n	Beta
Gender					
1 Male	27	-1.60		-1.04	
2 Female	14	3.08		2.00	
			.22		.14

Table 2 (continued)

Treatment					
1 Violent	15	5.51		5.13	
2 Nviolent	26	-3.18		-2.96	
			.41		.38
Multiple R Squared				.189	
Multiple R				.435	

*This and succeeding ANOVA and MCA tables are adapted directly from output of the SPSS program package (Nie, et al., 1975)

Table 3

Two-Way Analysis of Variance on Physiological Arousal, By Gender and Treatment

ANALYSIS OF VARIANCE

HRSA (HR variation during experiment)

By Gender and Treatment

Source of Variation	Sum of Squares	DF	Mean Square	F	Signif of F
Main Effects	744.887	2	372.443	2.562	.089
Gender	5.685	1	5.685	.039	.999
Treatment	735.173	1	735.173	5.056	.029
2-Way Interactions	83.294	1	83.294	.573	.999
Gender Treatment	83.294	1	83.294	.573	.999
Explained	828.181	3	276.060	1.899	.145
Residual	5379.575	37	145.394		
Total	6207.755	40	155.194		

MULTIPLE CLASSIFICATION ANALYSIS

HRSA By Gender Treatment

Grand Mean = 28.61

Variable + Category	N	Unadjusted Dev'n	Eta	Adjusted for Independents Dev'n	Beta
Gender					
1 Male	27	-.35		.27	
2 Female	14	.68		-.53	
			.04		.03

Table 3 (continued)

Treatment					
1 Violent	15	5.59		5.69	
2 Nviolent	26	-3.23		-3.28	
			.35		.35
Multiple R Squared				.120	
Multiple R				.346	

Table 4

Correlations Between Personality/Attitude Measures and Physiological Response for Males (n = 23)

Treatment	Scale			
	Es	TVKIDS	Weapons	Values
Violent Film (n = 25)				
HR acceleration	.43*	.22	-.15	-.19
HR deceleration	.40*	.03	-.49*	.03
SCR arousal	.44*	-.49*	-.60*	.25
Non-Violent Film (n = 24)				
HR acceleration	.20	-.24	-.09	-.04
HR deceleration	.23	-.23	-.29	-.03
SCR arousal	.43*	-.15	.00	.22

* $p < .05$

Table 5

Correlations Between Personality/Attitude Measures and Physiological Response for Females (n = 20)

Treatment	Scale			
	ES	TVKIDS	Weapons	Values
Violent Film (n = 12)				
HR acceleration	.15	.51	.29	-.36
HR deceleration	-.46	-.25	.02	-.14
SCR arousal	.35	.47	-.60	.20
Non-Violent Film (n = 10)				
HR acceleration	.20	-.09	.23	-.04
HR deceleration	.23	-.29	.13	-.03
SCR arousal	.42*	.00	.09	.04

* $p < .05$

Appendix A

"WEAPONS" Scale*

Item	Item - Scale Correlation**
1. The government should not interfere with citizen's rights to own guns.	.69
2. Masculine sports such as boxing and football build character.	.61
3. It is important for young men to learn how to handle weapons properly.	.70
4. Many people do not undertstand that hunting is a good recreational sport.	.64
5. Our society works best with a philosophy of 'survival of the fittest.'	.52

Mean = 17.61 Cronbach's alpha = .63

SD = 6.04

*Items taken from Brady & Rappoport (1973) and Watts & Sumi (1975).

**All interquartile t-tests for discrimination significant beyond the .0000 level.

Appendix B

Item Analysis: Perloe Social Values Scale*

	Item	Item-Scale Correlation**
+1.	People who try but are unable to provide for their own welfare have a right to expect help from others.	.52
+2.	Individuals should be ready to inhibit their own pleasures if these inconvenience others.	.59
3.	Whether an individual acts to protect the welfare of persons beyond his circle of friends and relatives is a matter of personal preference not moral obligation.	.60
4.	The mere fact that one group or nation is prosperous and another is not places no moral obligation on the 'have' group to improve the lot of the 'have not' group.	.58
+5.	Acting to protect the rights and interests of other members of one's community is a major obligation for all persons.	.59
6.	Except for one's immediate family and closest friends, people have a perfect right to pursue their own goals without regard to the convenience or comfort of others.	.61

*Source: Robinson & Shaver (1973, pp. 565-585)
All items scored on a 1 to 6 scale from "strongly agree" to "strongly disagree." "+" indicates that the item is reversed for scoring. High score indicates low social welfare values. From the several dimensions contained in Perloe's PVQ only those concerning social welfare and empathy were selected for this analysis.

**T-tests for interquartile discrimination were all significant beyond the .001 level.

	Item	Item-Scale Correlation**
+7.	People who are indifferent to the welfare of the members of the community in which they live and work cannot be considered moral.	.36
+8.	Things work best when people concern themselves with their own welfare and let others take of themselves.	.58
9.	One's major obligation to other men is to let them alone so that they may sink or swim by their efforts.	.59
10.	People should leave the prevention of immoral acts up to those whose jobs are specifically concerned with such prevention.	.43
11.	One should avoid trying to make people more moral and considerate than they generally are.	.53
12.	People cannot rely solely upon ministers, policemen and judges to insure moral behavior among the citizens of a community; they must each act to dissuade others from anti-social acts.	.43
13.	When one individual behaves unjustly toward another, it is wrong for a third person to intervene to correct the injustice unless he has been asked to do so.	.60

Mean = 35.04 Cronbach's alpha = .80

SD = 9.23

Appendix C

TVKIDS Scale

Item	Item-Scale Correlation
1. There is too much violence shown on television.	.73
2. It is wrong to discipline children with physical punishment.	.56
3. Children should not be given toys that have to do with violence.	.71
4. Verbal violence is just as bad as physical violence.	.46
5. War movies should not be shown on television.	.63
6. Detective and police movies are not suitable for viewing by most young people.	.63

Mean = 22.64

SD = 6.98

Cronbach's alpha = .68

*T-tests for interquartile discrimination significant at beyond the .0000 level.

Items adapted from Brady-Rappoport (1973) and Watts-Sumi (1975). High score indicates high rejection of violence in the milieu of children (either presented in the media or interpersonally).